

SVKM's
D. J. Sanghvi College of Engineering

Program: B.Tech in Computer Engineering

Academic Year: 2022

Duration: 3 hours

Date: 06.01.2023

Time: 10:30 am to 01:30 pm

Subject: Blockchain Technology (Semester VII)

Marks: 75

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.

- (1) This question paper contains two pages.
- (2) **All Questions are Compulsory.**
- (3) All questions carry equal marks.
- (4) **Answer to each new question is to be started on a fresh page.**
- (5) **Figures in the brackets on the right indicate full marks.**
- (6) **Assume suitable data wherever required, but justify it.**
- (7) Draw the neat labelled diagrams, wherever necessary.

Question No.		Max. Marks
Q.1 (a)	i. What is "difficulty" and how it relates to "target"? How "difficulty" is Calculated? Discuss how "difficulty" is adjusted in Bitcoin with examples OR ii. Explain various components of Blockchain Framework. Describe the structure of a Block in Blockchain.	[09] [09]
Q.1 (b)	What is Double Spending Problem. Explain with suitable example. How Blockchain overcomes this problem.	[06]
Q.2 (a)	i. Differentiate Externally Owned Address (EOA) and Contract Address(CA). OR ii. Explain various data types in Ethereum.	[06] [06]
Q.2 (b)	What is Merkle Root in Merkle Tree? What is the Role of Merkle Tree in Blockchain? Explain how Merkle tree helps to find altered transactions.	[09]
Q.3 (a)	Describe various roles of World State Trie, Transaction Trie, Receipt Trie in Ethereum Blockchain.	[09]
Q.3 (b)	i. What are the factors affecting the cost of execution in smart contract? Differentiate pre-London update and post-London update cost model in Ethereum. OR	[06]

	ii. Differentiate Proof of Stake(POS), Proof of Authority(POA) and Proof of Capacity (PoC) consensus mechanism	[06]
Q.4 (a)	i. Discuss Core features and capabilities in Zcash. OR i. What is the role of “Chaincode” in Hyperledger Fabric? Explain ordering, system and core Chaincodes.	[06] [06]
Q.4 (b)	Draw and discuss High Level Architecture of Hyperledger Fabric / Explain various Components of Hyperledger Fabric Network.	[09]
Q.5 (a)	i. Explain key ingredients of Distributed Finance model. OR ii. “Quantum Computing is the key role player of Blockchain Technology.” Justify.	[07] [07]
Q.5 (b)	Explain following Attacks on Blockchain i. Selfish Mining Attack ii. Finney Attack iii. Race Attack.	[08]